Section: Orthopedics

Original Research Article

# A PROSPECTIVE STUDY ON EVALUATION OF FUNCTIONAL OUTCOME OF ARTHROSCOPIC MENISCAL ROOT REPAIR

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***Received*** *: 18/01/2026*
***Received in revised form*** *: 11/03/2026*
***Accepted*** *: 28/03/2026*

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**DOI:** 10.70034/ijmedph.2026.2.348

**Source of Support:** Nil,
**Conflict of Interest:** None declared

**Int J Med Pub Health**
2026; 16 (2); 2078-2085

ABSTRACT

**Background: Aim:** To evaluate the clinical and functional outcome in patients undergoing arthroscopic meniscal root repair.

**Results:** The mean age of the study patients was 32 ± 8.64 yrs. The current study shows the gender distribution among the study patients where majority of the study patients were male i.e. 17 (56.67%) and remaining 13 (43.33%) were female. In the current study out of 30 patients majority of them were having normal BMI i.e. 14 (46.7%) patients. 26.7% patients were obese with BMI ≥ 30. Remaining 6.7% , 20% patients had BMI of <18.5, 25 - 29.9 respectively. The mean BMI of the study patients was 25.85 ± 4.67. In the current study majority of the study patients presented with right side meniscal root tear i.e. 63.3% of patients, while remaining 36.7% patients presented with meniscal tear on left knee. In the present study on evaluation of the mode of injury we found Domestic fall 33.3% and Degenerative were 33.3%. Remaining 30% cases were due to knee twisting included sports. Other injuries 1 cases (3.3%). In the present study, 63.3% of patients showed minor range of motion restriction on examination prior to surgery. Just three patients possessed a good range of motion. Eight patients, or 26% of the total, had 0–120 degrees of mobility. In the present study on evaluation of LYSHOLM Knee Score there was significant difference between the pre-operative and post-operative scores at each follow up. The pre-operative score was 62.84 ± 4.68 while the LYSHOLM Knee Score post-operative scores at 3 weeks, 6 weeks, 3 months and 6 months were 76.92 ± 5.64, 81.74 ± 3.96, 86.74 ± 3.84 and 93.64 ± 3.12 respectively. As compared to pre-op scores at the end of 6 months the difference was statistically significant with a p value < 0.0001. In the present study on evaluation of VAS pain scores there was significant difference between the pre-operative and post-operative scores at each follow up. The pre- operative score was 7.48 ± 0.96 while the post-operative scores at 3weeks, 6 weeks, 3 months and 6 months were 6.12 ± 0.84, 4.83 ± 0.91, 3.22 ± 1.12 and 1.27 ± 0.82 respectively. As compared to pre-op VAS scores at the end of 6 months the difference was statistically significant with a p value < 0.0001. In the current study, following arthroscopic surgery 63% patients had excellent outcome based on LYSHOLM knee score. 30%, 3% patients had good, fair outcome respectively. 3% of patients had poor outcome following surgery. In the current study 26.7% patients had pain following surgery, two patients had stiffness in knee joint following surgery, no patients had infection. In the current study there was no significant association (p- value >0.05) between age group, gender, BMI of study patients with surgical outcome based on LYSHOLM Knee Score.

**Conclusion:** The current study comes to the conclusion that meniscal tears are a very prevalent injury in adulthood. Of which meniscal roots tears goes unnoticed which occurs in simple domestic fall in degenerative joint. As soon

as possible, this needs to be diagnosed and treated. To prevent knee joint going to early osteoarthritis and further worsening of joint. Arthroscopy root repair produces favourable surgical outcomes. Patients treated with arthroscopy have good functional outcomes, and very few problems were reported. If proper post-operative physiotherapy is started at the appropriate time after meniscus root repair, it is possible to regain a good range of motion post-operatively with a significant improvement in the VAS score and LYSHOLM score.
**Keywords:** Arthroscopic meniscal root repair, VAS Score, LYSHOLM knee score, BMI.

## INTRODUCTION

The knee joint in the lower limbs is one of the major joints that bear weight. Before the latter part of the 20th century, the menisci in the knee were believed to be nothing more than the inert remnants of growing leg muscle.[1] Based on this assumption, the menisci were excised completely when symptomatic ripping was observed. Still, it was soon discovered that these structures were critical for maintaining joint health and delaying the onset of osteoarthritis.[1] In the 1970s and 1980s, research was conducted to assess the precise structure of the menisci and its function in the knee. This led to a change in treatment procedures that placed more emphasis on meniscus preservation.[2] But ever since then, the standard of patient care has been the main objective of "preservation." Future treatment modalities and protocols, such as tissue engineered replacements and targeted drug delivery, are hoped to improve clinical outcomes and quality of life in an aging population. This hope stems from ongoing research into the molecular pathways and meniscus biomechanics, including the response to injury. Restoring ligamentous stability and the mechanical axis will allow the knee joint to function painlessly and with a reasonable range of motion. This is the aim of surgical therapy for knee injuries.[3,4] For healthy knee function and joint preservation, the knee's menisci, two fibro cartilaginous structures, are essential. Between 40 and 70 percent of the tension transmitted through the knee is borne by the menisci. Menisci are also necessary to keep the knee stable. Menisci that are still intact can transform the axial strain of the tibia-femoral contact into hoop stress, protecting the knee joint.[5] For optimal knee kinematics and to prevent degenerative changes, the meniscal root insertion integrity is essential. Meniscal attachment injuries can lead to increased cartilage stress, meniscal extrusion, decreased contact area, and ultimately articular degeneration.[6] A total meniscectomy may result in rapid deterioration of the knee. Clinical and biomechanical research suggests that meniscal root rips and avulsions are the functional equivalent of a total meniscectomy. Lateral root tears are often the result of sprains and tears in the knee ligament. More chronic medial root tears can be brought on by pre-existing knee arthritis. Meniscal root repair is advised when a meniscal root tear is found in a knee with little to no arthritis. Conservative therapy is applied when osteoarthritis is the cause of chronic root tears. Of the major knee ligaments, the anterior cruciate ligament (ACL) is the one that sustains injuries the most frequently. Half of acute ACL tears are associated with meniscus injury, and in chronic ACL-deficient knees, this percentage increases to 90%. Meniscal root tears can worsen instability symptoms and impair the results of anterior cruciate ligament restoration if they are not treated in conjunction with cruciate ligament tears. To evaluate the Functional Outcome of Arthroscopic Meniscal Root Repair, the current investigation was done.

**Aims and Objectives**

**Aim of the study**

To evaluate the clinical and functional outcome in patients undergoing arthroscopic meniscal root repair

**Objectives**

- To assess the functional outcome and to evaluate result of arthroscopic meniscal root repair.
- To analyse the treatment efficacy and complications following repair.

## MATERIALS AND METHODS

**Study design:** Prospective observational study
**Duration of the study:** 18 months
**Sample size:** 30
**Source of the data:** Katuri medical college

**Inclusion Criteria**

- Patient MRI suggestive of meniscal root tear
- Age 18-55 years
- Able and willing to undertake postoperative exercises
- Patient willing to participate in the study
- Patient with grade I, II osteoarthritis of knee

**Exclusion Criteria**

- Associated with multi ligament knee injury
- Gross Chondral damage
- Patients not willing/unfit for surgery
- Active infection
- Grade III, IV Osteoarthritis of knee
- Patient is more than 55 years

**Method of collection**

Institutional Ethics Committee approval was obtained. Before any patient was enrolled, they were fully told about the trial and gave their consent. Following a thorough preanaesthetic assessment, all patients with meniscal root tear who attended the orthopaedics department's outpatient clinic and emergency room underwent arthroscopic meniscal root repair surgery. Clinical examination was

repeated post operatively at the end of 3 weeks, 6 weeks, 3 months and 6 months.

**Operative Procedure Positioning**

The patient was placed on the operating table with at least 110 degrees of knee flexion after the anaesthetic was administered, ideally by lowering the afflicted leg to the end of the table (hanging knee). Standard aseptic precautions were followed for the preparation and drapery of the limb. A tourniquet applied to the thigh was frequently used.

Post-operative management: Pillows were used to raise the limbs. After five days of intravenous antibiotics, the administration switched to oral medicines. Within 48 hours of surgery, quadriceps exercises and ankle mobilization were initiated. The second, fifth, and eighth post-operative days were spent dressing. On the twelfth post-operative day, the sutures were removed.

**Post-operative protocol**

- Sutures must be tied at the knee's 90-degree flexion so that flexion can begin right away after surgery because there will be significant stress on the meniscus, especially past 90 degrees.
- For two weeks, the patient was instructed to flex from 0 to 90 degrees and not to bear any weight. Flexion is increased as tolerated after two weeks.
- After six weeks, weight bearing began with crutches, which might eventually be removed.

**Follow-up**

**Duration after surgery:** 3 weeks/ 6 weeks/ 3 months/ 6 months. Ethical considerations: Prior approval from institutional ethics committee has been obtained. All 30 patients were informed about the nature of this study and its complications and valid informed written consent was obtained.

**Investigations Required**

- Complete blood picture
- Fasting Blood Sugar, Random Blood Sugar
- Renal function tests
- Viral screening
- Anteroposterior and lateral views of involved knee X-ray
- MRI knee
- Chest X-ray PA view
- ECG, 2D ECHO in hypertensive patients and patients with history of cardiac diseases

**Statistical Analysis:** MS Excel was used to collect and enter the data. Results were presented as means with standard deviations (SD) or as percentages (%). Using a paired t test, several parameters in the study group were compared. Using the Chi square test, categorical data were compared. The data were deemed significant if the p value was 0.05 or below. SPSS version 20.0 was used to do the statistical analysis.

## RESULTS

**Table 1: Age distribution among the study patients**

| Age | No. of Patients | Percentage |
|---|---|---|
| 18 – 28 | 4 | 13.3% |
| 29 – 38 | 8 | 26.7% |
| 39 - 48 | 8 | 26.7% |
| 49 – 55 | 10 | 33.3% |
| **Mean ± SD** | 32 ± 8.64 | |

**Table 2: Gender distribution among study patients**

| Gender | No. of Patients | Percentage |
|---|---|---|
| Male | 17 | 56.7% |
| Female | 13 | 43.3% |

**Table 3: BMI distribution among study patients**

| BMI | No. of Patients | Percentage |
|---|---|---|
| Underweight (<18.5) | 2 | 6.7% |
| Healthy (18.5 - 24.9) | 14 | 46.7% |
| Over weight (25 - 29.9) | 6 | 20.0% |
| Obesity (≥ 30) | 8 | 26.7% |
| Mean ± SD | 25.85 ± 4.67 | |

**Table 4: Side of presentation of meniscal root tear**

| Knee side | No. of Patients | Percentage |
|---|---|---|
| Right side knee | 19 | 63.3% |
| Left side knee | 11 | 36.7% |

**Table 5: Affected meniscus among the study patients**

| Meniscal root tear | | No. of Patients | Percentage |
|---|---|---|---|
| Lateral Meniscal root | Anterior root | 5 | 16.7% |
| | Posterior root | 7 | 23.3% |
| Medial Meniscal root | Anterior root | 5 | 16.7% |
| | Posterior root | 13 | 43.3% |

**Table 6: Mode of injury among the study patients**

| Mode of Injury | No. of Patients | Percentage |
|---|---|---|
| Domestic Fall | 10 | 33.3% |
| Sports | 9 | 30.0% |
| Degenerative | 10 | 33.3% |
| Others | 1 | 3.3% |

**Table 7: Range of motion preoperatively**

| Range of Motion Pre-operative | No. of Patients | Percentage |
|---|---|---|
| < 80 Degrees | 1 | 3.3% |
| 0 – 90 Degrees | 18 | 60% |
| 0 – 120 Degrees | 8 | 27% |
| >120 Degrees | 3 | 10% |

**Table 8: Range of motion postoperatively**

| Range of Motion Post-operative | No. of Patients | Percentage |
|---|---|---|
| < 80 Degrees | 0 | 0% |
| 0 – 90 Degrees | 2 | 6.6% |
| 0 – 120 Degrees | 5 | 16.7% |
| >120 Degrees | 23 | 76.7% |

**Table 9: Comparison of range of motion preoperative and postoperative**

| Range of Motion | Pre-operative | Post-operative | Chi-square | p-value |
|---|---|---|---|---|
| < 80 Degrees | 1 (3.3%) | 0 (0%) | 23.97 | **0.00001** |
| 0 – 90 Degrees | 18 (60%) | 2 (6.6%) | | |
| 0 – 120 Degrees | 8 (27%) | 5 (16.7%) | | |
| >120 Degrees | 3 (10%) | 23 (76.7%) | | |

On comparison of range of motion in the current study the range of motion increased after surgery when compared to before surgery and the difference was found to be statistically significant with p value of 0.00001.

**Table 10: No. of Sutures required among the study patients**

| No. of Suture required | No. of Patients | Percentage |
|---|---|---|
| One | 21 | 70% |
| Two | 9 | 30% |

**Table 11: LYSHOLM Knee Score in the study patients**

| LYSHOLM Knee Score | Pre-operative score | Post-operative score | | | |
|---|---|---|---|---|---|
| | | 3 Weeks | 6 Weeks | 3 Months | 6 Months |
| **Mean** | 62.84 | 76.92 | 81.74 | 86.74 | 93.64 |
| **S.D** | 4.68 | 5.64 | 3.96 | 3.82 | 3.12 |
| **P - value** | **<0.0001** | | | | |
| | | **0.0003** | | | |
| | | | | **<0.0001** | |

In the present study on evaluation of LYSHOLM Knee Score there was significant difference between the pre-operative and post-operative scores at each follow up. The pre-operative score was 62.84 ± 4.68 while the LYSHOLM Knee Score post-operative scores at 3weeks, 6 weeks, 3 months and 6 months were 76.92 ± 5.64, 81.74 ± 3.96, 86.74 ±3.84 and 93.64 ± 3.12 respectively. As compared to pre-op scores at the end of 6 months the difference was statistically significant with a p value < 0.0001.

**Table 12: VAS score among the study patients**

| VAS Score | Pre-operative score | Post-operative score | | | |
|---|---|---|---|---|---|
| | | 3 Weeks | 6 Weeks | 3 Months | 6 Months |
| **Mean** | 7.48 | 6.12 | 4.83 | 3.22 | 1.27 |
| **S.D** | 0.96 | 0.84 | 0.91 | 1.12 | 0.82 |
| **P – value** | **0.0002** | | | | |
| | | **<0.0001** | | | |
| | | | | **<0.0001** | |

**Table 13: Outcome based on LYSHOLM Knee Score among the study patients**

| Outcome | No. of Patients | Percentage |
|---|---|---|
| Excellent (95-100) | 19 | 63.3% |
| Good (84-94) | 9 | 30% |
| Fair (65-83) | 1 | 3.3% |
| Poor (<64) | 1 | 3.3% |

**Table 14: Complications among the study patients**

| Complications | No. of Patients | Percentage |
|---|---|---|
| Infection | 0 | 0% |
| Stiffness | 2 | 6.6% |

**Table 15: Association of age of study patients with the functional outcome**

| Age in yrs | Excellent | Good | Fair | Poor | P - value |
|---|---|---|---|---|---|
| 18 – 28 yrs | 3 (15.8%) | 2 (22.2%) | 0 (0%) | 0 (0%) | |
| 29 – 38 yrs | 5 (26.3%) | 3 (33.3%) | 0 (0%) | 0 (0%) | |
| 39 - 48 yrs | 10 (52.7%) | 3 (33.3%) | 0 (50%) | 0 (0%) | 0.211 |
| 49 – 55 yrs | 1 (5.3%) | 1 (11.1%) | 1 (100%) | 1 (100%) | |
| Total | 19 (63.3%) | 9 (30%) | 1 (3.3%) | 1 (3.3%) | |

**Table 16: Association of gender of study patients with the functional outcome**

| Gender | Excellent | Good | Fair | Poor | P – value |
|---|---|---|---|---|---|
| Male | 14 (73.7%) | 3 (37.5%) | 0 (0%) | 0 (0%) | |
| Female | 5 (26.3%) | 6 (62.5%) | 1 (100%) | 1 (100%) | 0.048 |
| **Total** | 19 (63.3%) | 9 (30%) | 1 (3.3%) | 1 (3.3%) | |

**Table 17: Association of BMI of study patients with the functional outcome**

| BMI | Excellent | Good | Fair | Poor | P - value |
|---|---|---|---|---|---|
| <18.5 | 1 (5.3%) | 1 (11.1%) | 0 (0%) | 0 (0%) | |
| 18.5 - 24.9 | 12 (40%) | 2 (22.2%) | 0 (0%) | 0 (0%) | |
| 25 - 29.9 | 4 (13.3%) | 2 (22.2%) | 0 (0%) | 0 (0%) | 0.165 |
| ≥ 30 | 2 (6.7%) | 4 (44.4%) | 1 (100%) | 1 (100%) | |
| Total | 19 (63.3%) | 9 (30%) | 1 (3.3%) | 1 (3.3%) | |

# DISCUSSION

This was a prospective observational study conducted in the 30 patients with meniscal root tear at the Department of orthopaedics, Katuri Medical College and Hospital, Katuri city, Guntur, for a period of 18 months. All the patients underwent meniscal root repair. All the patients were followed up at 3 weeks, 6 weeks, 3 months, 6 months both clinically using LYSHOLM Knee Scoring Scale. The study patients based on the outcome scores were divided into Excellent, Good, Fair and Poor.

**Age distribution**

The current study shows the age distribution of study patients where majority of the patients i.e. 10 (33.3%) in 49-55 age group. Followed by 8 patients, 8 patients, and 4 patients in 29-38 yrs, 39-48 yrs & 18-28 yrs age groups respectively. The mean age of the study patients was 32 ± 8.64 yrs. According to a study by Nicholas Antao et al.[7] on the assessment of the age distribution, the majority of the 52 patients in the study fell within the 40–50 year age range. The mean age was 40.03 + 9.37 years. In a study done by Gianluca Ciapini et al,[8] the mean age was 44.9 years. In a study done Venkata Ritesh Akarapu et al,[9] the mean age was found to be 27.5 years. Mean age in years was 48.56 + 6.43, age ranging from 51 to 73 years was reported in a study done by Ambulgekar et al.[10]

**Gender distribution**

The current study shows the gender distribution among the study patients where majority of the study patients were male i.e. 17 (56.67%) and remaining 13 (43.33%) were female. According to a study by Nicholas Antao et al.[7] On evaluating the gender distribution, out of the 52 instances in the study, the majority of patients (18 patients, or 69.23%) were male. Meniscal injuries are more common in men, which may be a result of men engaging in more physically demanding sports and performing manual tasks, both of which increase the risk of rotational injuries to the knee. In females, meniscus injuries were most frequently caused by twisting the leg at home. In a study done Venkata Ritesh Akarapu et al,[9] 16 (80%) were males & 4 (20%) were females. In a study done by G. Ramesh et al,[11] out of 20 patients, 17 (85%) patients were males & 3 (15%) were females.

**BMI distribution**

In the current study out of 30 patients majority of them were having normal BMI i.e. 14 (46.7%) patients. 26.7% patients were obese with BMI ≥ 30. Remaining 6.7%, 20% patients had BMI of <18.5, 25 - 29.9 respectively. The mean BMI of the study patients was 25.85 ± 4.67. In a study done by Noorduyn, J. C. A. et al,[12] on evaluation of BMI in study patients 56, 72, 20 patients had 18.5-25, 26-30, 31-35 BMI respectively in Partial Meniscectomy (n = 158) group. In the Physical Therapy (n = 161)

group, 53, 67, 41patients had 18.5-25, 26-30, 31-35 respectively.

**Side of presentation of meniscal root tear**

In the current study majority of the study patients presented with right side meniscal root tear i.e. 63.3% of patients, while remaining 36.7% patients presented with meniscal tear on left knee. In a study done by Nicholas Antao et al,[7] out of the 52 cases on the evaluation of the surgical side, 34 patients, or 65.38 percent of the patients, experienced injuries on the right side. In a study done by Noorduyn, J. C. A. et al,[12] on evaluation the surgical side in Partial Meniscectomy (n = 158) group, 88 (55.7%) experience injury on Right knee, while in the Physical Therapy (n = 161) group, 81 (50.3%) experience injury on right side.

**Affected meniscus**

In the present study on evaluation it was found that of the 30 cases in the study 18 (60%) patients had Medial meniscus root tear, 12 (40%) patients had lateral meniscus root tear.

In a study done by Noorduyn, J. C. A. et al,[12] on evaluation in Partial Meniscectomy (n = 158) group the affected meniscus was medial in 126 cases, lateral in 30 cases & in 2 cases both menisci was affected. While in the Physical Therapy (n = 161) group, 136 cases medial meniscus was affected, in 25 cases lateral meniscus was affected.

Of the 52 cases in the evaluation of a study done by Nicholas Antao et al,[7] 46 patients had medial meniscus root tears and 6 patients had lateral meniscus root tears, according to our current analysis. Every one of them had posterior root tears.

In a study done by Singh SP et al,[13] of the 28 patients, 14 had an associated ACL injury (50%), 1 had a medial collateral ligament injury (3.5%), 2 had a chondral injury (7%) and the remaining 9 patients (32.3%) had isolated medial meniscus, and 2 patients (7%) had isolated lateral meniscus.

**Mode of injury**

In the present study on evaluation of the mode of injury we found domestic fall and degenerative were 33.3%. Remaining 30% cases were due to knee twisting included sports. Other injuries 1 cases (3.3%).

In a study done by Singh SP et al,[13] sports injuries accounted for 46.4 percent of all injuries, with RTA accounting for 9 (32.1%), falls accounting for 4 (14%), and direct blows accounting for 2 (7%) of cases.

Most common mode of injury was road traffic accident (56.6%) was reported in a study done by Ambulgekar et al.[10]

**Preoperative Range of motion**

In the present study, 63.3% of patients showed minor range of motion restriction on examination prior to surgery. Just three patients possessed a good range of motion. Eight patients, or 26% of the total, had 0–120 degrees of mobility.

On comparison of range of motion in the current study the range of motion increased after surgery when compared to before surgery and the difference was found to be statistically significant with p value of 0.00001

When range of motion was assessed before surgery in a study done by Nicholas Antao et al,[7] 53.85% of patients showed minor range of motion restriction on examination prior to surgery. Just six patients possessed a good range of motion. 18 patients, or 34.62% of the total, had 91–120 degrees of mobility

**Postoperative Range of motion**

On evaluation of range of motion after surgery in the current study 93.4% shows improvement in range of motion. Only 2 (6.6%) patients had restriction in range of motion.

When range of motion was assessed after surgery in a study done by Nicholas Antao et al,[7] the majority of patients (12 patients, 23.08%) had an excellent range of motion of 130 degrees. With a p value of less than 0.001, the overall improvement in range of motion was statistically significant.

**No. of Sutures required**

In the current study majority of the cases i.e. 70% require only one suture, remaining 30% cases require 2 sutures.

**LYSHOLM Knee Score**

In the present study on evaluation of LYSHOLM Knee Score there was significant difference between the pre-operative and post-operative scores at each follow up. The pre-operative score was 62.84 ± 4.68 while the LYSHOLM Knee Score post-operative scores at 3weeks, 6 weeks, 3 months and 6 months were 76.92 ± 5.64, 81.74 ± 3.96, 86.74 ± 3.84 and 93.64 ± 3.12 respectively. As compared to pre-op scores at the end of 6 months the difference was statistically significant with a p value < 0.0001.

A significant change was observed between the pre-operative and post-operative ratings at each follow-up in a study on the evaluation of the LYSHOLM Knee Score conducted by Nicholas Antao et al.[7] The pre-operative score was 68.52, while the post-operative LYSHOLM Knee Score was 81.72 at 6 weeks, 85.72 at 3 months, and 92.23 at 6 months. At the end of six months, the difference was statistically significant (p value < 0.001) when compared to pre-op scores.

In a study done by Dr. Ravikiran H.G. et al,[14] on evaluation of LYSHOLM Knee Score a significant difference was found with a p value =0.0001. The LYSHOLM Knee Score postoperative scores at 6 weeks, 9 weeks, 12 weeks& 12 months were 72.17 ± 6.83, 82.17 ± 4.78, 88.04 ± 3.18 and 91.26 ± 2.16 respectively.

Twelve patients had outstanding results, fifteen had good outcomes, and one patient had a bad outcome, according to a study by Singh SP et al.[13] The Lysholm-Tegner grading at the end of the 12-month point revealed this. At the final follow-up, the mean Lysholm-Tegner score was 88.42 ± 9.1.

**VAS scores**

In the present study on evaluation of VAS pain scores there was significant difference between the pre-operative and post-operative scores at each follow up. The pre-operative score was 7.48 ± 0.96 while the

post-operative scores at 3weeks, 6 weeks, 3 months and 6 months were 6.12 ± 0.84, 4.83 ± 0.91, 3.22 ± 1.12 and 1.27 ± 0.82 respectively. As compared to pre-op VAS scores at the end of 6 months the difference was statistically significant with a p value < 0.0001.

The pre-operative and post-operative scores at each follow-up showed a significant difference, according to a study on the evaluation of VAS Score conducted by Nicholas Antao et al.[7] Prior to surgery, the VAS was 7.46; six weeks later, it was 4.23; and three months later, it was 3.12. In comparison to pre-operative scores, the VAS post- operative at six months was 1.19. After six months, the difference was statistically significant, with a p value of less than 0.001.

In a study done by Noorduyn, J. C. A. et al,[12] on evaluation, the Mean VAS score in Partial Meniscectomy (n = 158) group was 61.1 ± 24.5, while in the Physical Therapy (n = 161) group, the Mean VAS score was 59.3 ± 22.6.

**Outcome based on LYSHOLM Knee Score**

In the current study, following arthroscopic surgery 63% patients had excellent outcome based on LYSHOLM knee score. 30%, 3% patients had good, fair outcome respectively. 3% of patients had poor outcome following surgery.

In a study done by Nicholas Antao et al,[7] following arthroscopic surgery 63% patients had excellent outcome based on LYSHOLM knee score. 27%, 7% patients had good, fair outcome respectively. 3% of patients had poor outcome following surgery.

**Complications**

In the current study two patients had stiffness (6.6%) in knee joint following surgery, and no patients had infection. In research conducted by Singh SP et al.[13] Of the 28 patients, 3 (10.5%) experienced problems such as numbness, 2 (7%) experienced discomfort, and 1 (3.5%) experienced effusion. There were no infections mentioned.

**Association of age of study patients with the functional outcome**

In the current study there was no significant association (p- value >0.05) between age group and surgical outcome based on LYSHOLM Knee Score.

**Association of gender of study patients with the functional outcome**

In the current study there was no significant association (p- value >0.05) between gender and surgical outcome based on LYSHOLM Knee Score.

**Association of BMI of study patients with the functional outcome**

No significant association was found in the current study between BMI and the functional outcome following surgery.

## CONCLUSION

The current study comes to the conclusion that meniscal tears are a very prevalent injury in adulthood. Of which meniscal roots tears goes unnoticed which occurs in simple domestic fall in degenerative joint. As soon as possible, this needs to be diagnosed and treated. To prevent knee joint going to early osteoarthritis and further worsening of joint. Arthroscopy root repair produces favourable surgical outcomes. Patients treated with arthroscopy have good functional outcomes, and very few problems were reported. If proper post-operative physiotherapy is started at the appropriate time after meniscus root repair, it is possible to regain a good range of motion post-operatively with a significant improvement in the VAS score and LYSHOLM score.

**Conflict of Interest:** None

**Funding Support:** Nil

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